UNITED STATES PATENT AND TRADEMARK OFFICE

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10/674,873	09/30/2003	George Logsdon	P05706	9203

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EXAMINER
RODRIGUEZ, PAUL L

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DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>26 February 2004</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-26 are presented for examination.

Drawings

2.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 352, 452. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 52 (figure 3B and 4B), 376. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to

obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action.

The objection to the drawings will not be held in abeyance.

4.   The examiner has provided a number of examples of the drawing deficiencies in the above,

however, the list of deficiencies may not be all inclusive. Applicant should refer to these as

examples of deficiencies and should make all the necessary corrections to eliminate the drawing

objections.

Specification

5.   Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a
separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150
words in length since the space provided for the abstract on the computer tape used by the printer
is limited. The form and legal phraseology often used in patent claims, such as "means" and
"said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers
in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the
title. It should avoid using phrases which can be implied, such as, "The disclosure concerns,"
"The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it contains a number of words in

excess of 150 words. Correction is required. See MPEP § 608.01(b).

6.   The disclosure is objected to because of the following informalities:

Page 12 lines 10-14 refers to reference number 208a as without crosshatches and 208b

with crosshatches, figure 2A-1 shows both 208a and 208b without crosshatches.

Page 12 lines 19-20 states "210a, with crosshatches", figure 2A-2 shows no crosshatches.

Page 12 line 21 states "lightly shaded objects, such as object 210b", reference number

210b has no shading present.

Page 12 line 22 – page 13 line 1 states "the darker shaded objects, such as object 210c",

reference number 210c has no shading.

Page 14 line 3 states "212b, with lighter shading", figure 2A-2 shows no shading for 212b.

Page 14 line 5 states "212c, with darker shading", figure 2A-2 shows no shading for 212c.

Appropriate correction is required.

7.   The examiner has provided a number of examples of the specification deficiencies in the

above, however, the list of deficiencies may not be all inclusive. Applicant should refer to these as

examples of deficiencies and should make all the necessary corrections to eliminate the

specification objections.

Claim Objections

8.   Claims 1 and 12 are objected to because of the following informalities:

Claim 1 line 20 refers to "the at least one resource", previously "a plurality of resources",

"the resource", "at least some of the resources" and "at least one of the resources" (plural).

References to the same limitations should remain consistent to avoid any possible confusion in the

claim.

Claim 12 line 6 refers to "the one or more items identified", previously "resources and

flow" where "identified", unclear if this is what the claim is referring to, could create an

antecedent problem in the claim.

Appropriate correction is required.

9.   The examiner has provided a number of examples of the claim deficiencies in the above,

however, the list of deficiencies may not be all inclusive. Applicant should refer to these as

examples of deficiencies and should make all the necessary corrections to eliminate the claim

objections.

Claim Rejections - 35 USC § 112

10.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

11.   Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.

12.   Claim 1 recites the limitation "the resources and flows" in lines 16-17. There is insufficient

antecedent basis for this limitation in the claim.

13.   Claim 6 recites the limitation "the first portion" in lines 1-2. There is insufficient

antecedent basis for this limitation in the claim.

14.   Claim 8 recites the limitation "the second portion" in lines 1-2. There is insufficient

antecedent basis for this limitation in the claim.

15.   Claim 11 recites the limitation "the resources and flows" in lines 14-15. There is

insufficient antecedent basis for this limitation in the claim.

16.   Claim 16 recites the limitation "the first portion" in line 1. There is insufficient antecedent

basis for this limitation in the claim.

17.   Claim 18 recites the limitation "the second portion" in line 1. There is insufficient

antecedent basis for this limitation in the claim.

18.   Due to the number of 35 USC § 112 second paragraph rejections, the examiner has

provided a number of examples of the claim deficiencies in the above rejection(s), however, the

list of rejections may not be all inclusive. Applicant should refer to these rejections as examples

of deficiencies and should make all the necessary corrections to eliminate the 35 USC § 112

second paragraph problems and place the claims in a proper format.

Claim Rejections - 35 USC § 101

19.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any
> new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of
> this title.

Claims 11-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to

non-statutory subject matter. The method as recited is not technically embodied, the method can

be performed simply by a person acting as a resource allocator, by monitoring resources.

Representation mathematically could be an abstract representation on paper where a person could

provide mathematical indications of resource status and use those representations to assign tasks.

The graphical user interface and virtual queue could again be an abstract representation on paper.

The term virtual, by its nature is simply a representation of something that is not physically

embodied, such as an image, picture or drawing can be considered virtual. Insertion of the phrase

"computer implemented" into the preamble of the claim would render the claim statutory. A

computer implemented method of..."

20.   Due to the vagueness and a lack of a clear definition of the terminology and phrases used

in the specification and claims, the claims have been treated on their merits as best understood by

the examiner.

Claim Rejections - 35 USC § 103

21.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims

under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was

commonly owned at the time any inventions covered therein were made absent any evidence to

the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35

U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

22.   Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bickley et

al (U.S. Pat 6,615,092).

Bickley et al teaches a resource allocator (figure 3) and method (abstract) operable to

allocate a plurality of resources among a plurality of tasks within a process system, the process

system capable of executing at least one application process (col. 2 lines 37-65, col. 4 lines 43-67,

col. 6 line 15 – col. 7 line 63), the resource allocator comprising a monitoring controller operable

to monitor one or more characteristics associated with the at least one application process, the

resources, and the tasks (col. 4 lines 52-55, col. 7 lines 30-45, col. 7 line 64 – col. 8 line 12), a

model of the process system representing mathematically the resources and the tasks and defining

relationships among related ones of the resources and the tasks as a function of the at least one

application process (WIP profile, col. 4 lines 43-52, col. 10 lines 3-55, steps 508-514), a resource

allocation controller operable to operate the model in response to ones of the monitored

characteristics and allocate ones of the resources among ones of the tasks to execute the at least

one application process (col. 2 lines 54-65, col. 8 lines 59-64), and a graphical user interface

operable to identify the resources and flows between at least some of the resources (col. 2 lines 50-

53, col. 3 lines 1-5, col. 9 lines 11-25, col. 10 lines 3-55, reference number 319-322, 403), the

graphical user interface comprising at least one virtual queue associated with at least one of

resources and identifying one or more items to be processed by the at least one resource (col. 6

line 61 – col. 7 line 7, col. 7 lines 19-23 "staged", col. 8 line 65 – col. 9 line 10 "reselect an

allocated resource", col. 9 lines 27-40, col. 10 lines 40-43 "current volume scheduled"). Examiner

would like to point out that any reference to specific figures, columns and lines should not be considered limiting in any way, the entire reference is considered to provide disclosure relating to the claimed invention.

Bickley et al fails to specifically teach a "virtual queue".

Examiner considers the term virtual queue to be supported by the user interface recited in Bickley et al, teaches updating the user interface in real time, teaches an automated storage and retrieval system 108 which can be considered a queue, teaches products being boxed or staged, which is considered queuing, teaches resources for storing which is part of the queuing process, teaches reallocating work that was already scheduled for processing, teaches remote monitoring system including a graphical illustration of each piece of equipment in the manufacturing facility and an associated status log for the equipment in col. 10 lines 3-19, and providing all of this information to a user in a real time display.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a "virtual queue" in the resource allocator of Bickley et al because a virtual queue is simply a graphical user representation of a queue, which the display of Bickley et al already provides.

23.   Claims 20, 21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Pat 5,616,208) in view of Rangachari et al (U.S. Pat 6,470,227).

Lee teaches (claim 20) a computer program embodied on a computer readable medium and operable to be executed by a processor (col. 29 lines 12-17), the computer program comprising computer readable program code for generating a graphical user interface (col. 29 lines 18-23), and semiconductor wafer processing equipment consists of wet decks (table 3, col. 33 lines 24-30,

col. 33 line 54 – col. 34 line 59) and one or more furnaces, the one more furnaces comprising at

least one vertical polysilicon furnace (col. 33 lines 31-35).

Lee fails to teach (claim 20) the graphical user interface comprising a first portion

identifying at least two types of semiconductor wafers to be processed by at least one of one or

more semiconductor manufacturing equipment, a second portion identifying the one or more

semiconductor manufacturing equipment and flows of semiconductor wafer lots between the one

or more semiconductor manufacturing equipment, the second portion comprising at least one

virtual queue operable to identify one or more semiconductor wafer lots to be processed by the at

least one semiconductor manufacturing equipment, (claim 21) the virtual queue identifies a recipe

associated with each semiconductor wafer lot, a number of semiconductor wafers in each

semiconductor wafer lot, and a latest time when each semiconductor wafer lot should be provided

to the at least one semiconductor manufacturing equipment, (claim 23) wherein the first portion

comprises a plurality of buckets, each bucket associated with one type of semiconductor wafer to

be processed by the semiconductor manufacturing equipment, each bucket identifying a plurality

of time periods and a number of semiconductor wafers to be processed during each of the time

periods.

Rangachari et al teaches (claim 20) a computer program embodied on a computer readable

medium and operable to be executed by a processor (abstract, col. 5 lines 6-12, col. 6 lines 8-24),

the computer program comprising computer readable program code for generating a graphical user

interface (col. 6 lines 25-31, col. 7 lines 20-24), the graphical user interface comprising a first

portion identifying at least two types of semiconductor wafers to be processed by at least one of

one or semiconductor manufacturing equipment (figure 2, col. 9 lines 13-42), and a second portion

identifying the semiconductor manufacturing equipment and flows of semiconductor wafer lots

between the semiconductor manufacturing equipment (figure 4, col. 13 lines 4-12), the second

portion comprising at least one virtual queue operable to identify one or more semiconductor

wafer lots to be processed by the semiconductor manufacturing equipment (figure 4, col. 8 lines

23-29, col. 13 lines 4-41), (claim 21) wherein the virtual queue identifies a recipe associated with

each semiconductor wafer lot, a number of semiconductor wafers in each semiconductor wafer lot,

and a latest time when each semiconductor wafer lot should be provided to the semiconductor

manufacturing equipment (col. 10 lines 13-42, col. 13 lines 16-41), (claim 23) wherein the first

portion comprises a plurality of buckets (reference number 102), each bucket associated with one

type of semiconductor wafer to be processed by the semiconductor manufacturing equipment,

each bucket identifying a plurality of time periods and a number of semiconductor wafers to be

processed during each of the time periods (col. 10 lines 9-26, col. 13 lines 16-41).

Lee and Rangachari et al are analogous art because they are both related to processing

semiconductor wafers and each includes a user interface.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize the Graphical User Interface of Rangachari et al in the control

system including wet decks and a vertical polysilicon furnace of Lee because wet deck and

vertical polysilicon furnaces are well known in the art of semiconductor wafer processing and

Rangachari et al teaches a system that provides a quick means to configure new equipment and

automates all types of equipment (col. 4 lines 36-50), can automate any microelectronic

manufacturing process (col. 5 lines 50-64), speedy automation of equipment through the graphical

user interface (col. 9 lines 3-9), automation for all types of equipment (col. 11 lines 48-65) and

that the computer program of the present invention is expandable to provide software that includes

monitoring and controlling temporary material storage (col. 16 lines 32-51, considered a queue).

24.   Claims 2, 3, 5, 6, 10, 12, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lee (U.S. Pat 5,616,208) in view of Rangachari et al (U.S. Pat 6,470,227) as

applied to claims 20, 21 and 23 above, and further in view of Bickley et al (U.S. Pat 6,615,092).

        Lee as modified by Rangachari et al teaches a computer embodied program for generating

a graphical user interface as recited in claims 20, 21 and 23 for the reasons above, differing from

the invention as recited in claims 2, 3, 5, 6, 10, 12, 13, 15 and 16 in that their combined teaching

lacks the resource allocator as recited in claim 1.

        Bickley et al teaches the resource allocator as recited in claim 1.

        Lee as modified by Rangachari et al and Bickley are analogous art because they are both

related to manufacturing systems with user interfaces.

        Therefore, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize the resource allocator of Bickley et al in the graphical user interface

of Lee as modified by Rangachari et al because Bickley et al teaches real time acquisition of work

in process profiles to a control center to allow an operator to make timely decisions as to the

reallocation of work improving throughput (col. 7 lines 30-45) and a greater number of carrier

vehicles can be accommodated at one time making it possible for the manufacturer to increase

production levels and to provide customers with products in a timely manner while utilizing the

just-in-time approach to procuring material and provides for a work flow that is conducive to rapid

production and space efficiency (col. 5 lines 41-63).

25.   Claims 8, 9, 18, 19, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lee (U.S. Pat 5,616,208) in view of Rangachari et al (U.S. Pat 6,470,227) and Bickley et al

(U.S. Pat 6,615,092).

Lee as modified by Rangachari et al and Bickley et al teaches a resource allocator with a graphical user interface as recited in claims 1-3, 5, 6, 10-13, 15 and 16 for the reasons above, the combination does not expressly teach the use of graphical user interface objects of different shapes, colors or shading to identify an object.

Official notice is taken that the use of different shapes, colors and shading used in Graphical User Interfaces was well known at the time the invention was made such as in the art of Hocker et al (U.S. Pat 5,754,179) which teaches the well known practice of using color, shape and shading in GUI icons.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use color, shape and shading in GUI icons to provide a graphical user interface to display different elements and features because it was well known that the use of icons of varying shape, color and shading provide a user friendly, dynamic visual presentation to an operator (abstract), therefore it would have been obvious to modify Lee as modified by Rangachari et al and Bickley et al to obtain that invention as specified in claims 8, 9, 18, 19, 25 and 26.

26.   Claims 4, 7, 14, 17, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Pat 5,616,208) in view of Rangachari et al (U.S. Pat 6,470,227) and Bickley et al (U.S. Pat 6,615,092) and further in view of Rosenthal et al (U.S. Pat 6,161,054).

Lee as modified by Rangachari et al and Bickley et al teaches a resource allocator with a graphical user interface as recited in claims 1-3, 5, 6, 10-13, 15 and 16 for the reasons above, the combination fails to teach associating information in the graphical user interface with a spreadsheet.

Rosenthal et al teaches a graphical user interface wherein the graphical user interface

presents data in a spreadsheet format (col. 5 lines 49-65).

Lee as modified by Rangachari et al and Bickley et al and Rosenthal et al are analogous art

because they are both related to semiconductor manufacturing with a graphical user interface.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize a user interface using the spreadsheet of Rosenthal et al in the

resource allocator with a graphical user interface of Lee as modified by Rangachari et al and

Bickley et al because it is well known that a spreadsheet can provide a large amount of

information in a well organized format and Rosenthal et al teaches a significant improvements in

overall equipment effectiveness, and reductions in production costs (col. 9 line 30-44).

Conclusion

27.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Hattori (U.S. Pat 6,306,740 and U.S. Pat 5,839,934), Tanabe et al (U.S. Pat 6,197,702) and

Yao et al (U.S. Pat 5,746,512) – all teach the use of a vertical polysilicon furnace and a wet deck.

Alford, Jr. et al (U.S. Pub 2004/0012637) – teaches a user interface for resource allocation.

Kall et al (U.S. Pub 2003/0200130) – teaches a user interface with a queue.

Haanstra et al (U.S. Pat 6,732,006) – teaches a GUI interface for resource allocation.

Romero et al (U.S. Pat 6,256,549) – teaches a graphical user interface that allows a user to

go to an excel database, excel is a well known spreadsheet.

Bermon et al (U.S. Pat 5,946,212) – teaches a graphical user interface for resource
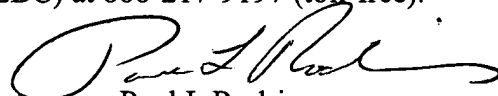
allocation.

Chapman (U.S. Pat 5,291,394) – teaches virtual allocation of resources.

28.   Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Paul L Rodriguez whose telephone number is (571) 272-3753. The

examiner can normally be reached on 6:00 - 4:30 T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Leo P Picard can be reached on (571) 272-3749. The fax phone number for the organization

where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul L Rodriguez
Primary Examiner
Art Unit 2125

PLR
3/2/05